1. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

$$\frac{-4}{5}, \frac{-1}{2}, \text{ and } \frac{2}{5}$$

A. $a \in [47, 51], b \in [44, 46], c \in [-10, -4],$ and $d \in [5, 10]$

B. $a \in [47, 51], b \in [-86, -79], c \in [41, 48],$ and $d \in [-11, -2]$

C. $a \in [47, 51], b \in [-50, -44], c \in [-10, -4],$ and $d \in [5, 10]$

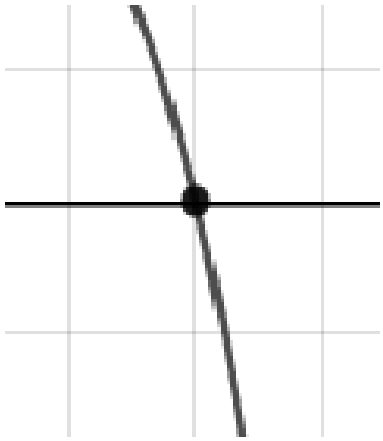
D. $a \in [47, 51], b \in [44, 46], c \in [-10, -4],$ and $d \in [-11, -2]$

E. $a \in [47, 51], b \in [-35, -28], c \in [-16, -10],$ and $d \in [5, 10]$

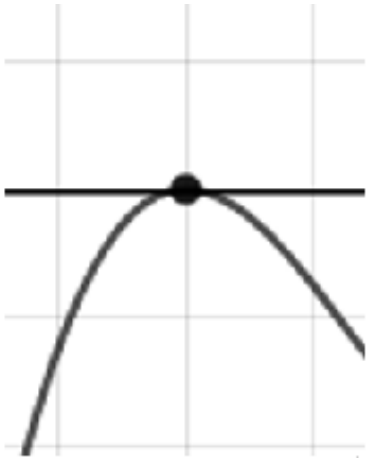
---

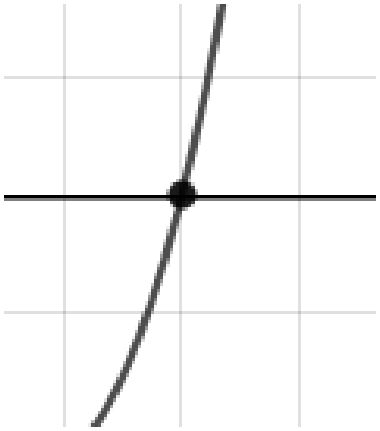
2. Describe the zero behavior of the zero $x = 4$ of the polynomial below.

$$f(x) = -5(x + 4)^6(x - 4)^7(x + 5)^3(x - 5)^6$$

A. 

C. 

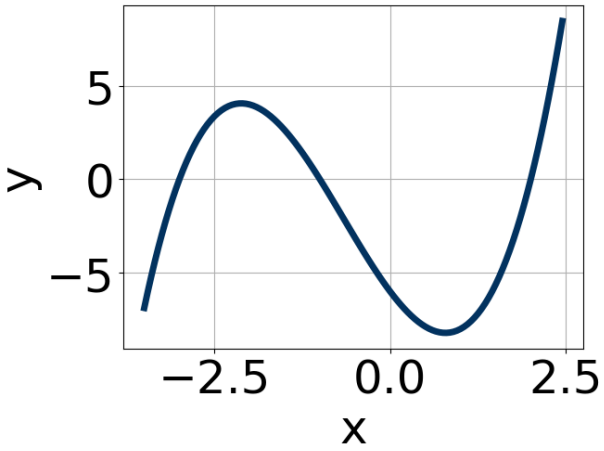
B. 

D. 

E. None of the above.

---

3. Which of the following equations *could* be of the graph presented below?



A. $17(x-2)^8(x+1)^9(x+3)^{11}$

B. $-7(x-2)^4(x+1)^7(x+3)^{11}$

C. $15(x-2)^7(x+1)^5(x+3)^7$

D. $-2(x-2)^{11}(x+1)^9(x+3)^9$

E. $7(x-2)^{10}(x+1)^8(x+3)^{11}$

---

4. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form x^3+bx^2+cx+d.

$$-4-2i \text{ and } -1$$

A. $b \in [0,4], c \in [4.37, 5.42],$ and $d \in [2.7, 4.8]$

B. $b \in [6,11], c \in [27.08, 28.41],$ and $d \in [14.4, 20.2]$

C. $b \in [-9,-7], c \in [27.08, 28.41],$ and $d \in [-20.3, -18.9]$

D. $b \in [0,4], c \in [0.79, 4.62],$ and $d \in [-0.4, 3.2]$

E. None of the above.

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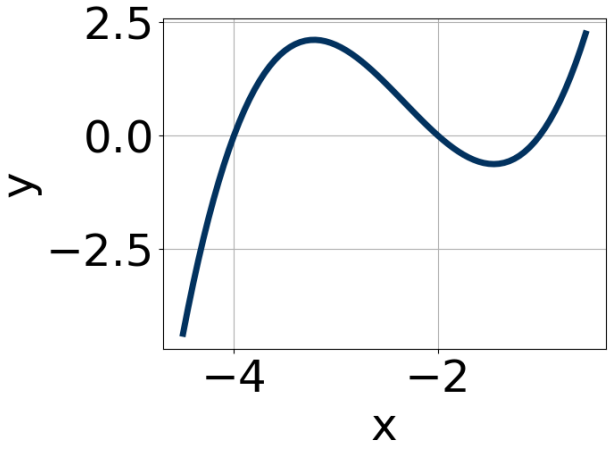
5. Which of the following equations *could* be of the graph presented below?



A. $-7(x+1)^5(x+2)^9(x+4)^9$

B. $10(x+1)^{10}(x+2)^5(x+4)^7$

C. $9(x+1)^9(x+2)^7(x+4)^{11}$

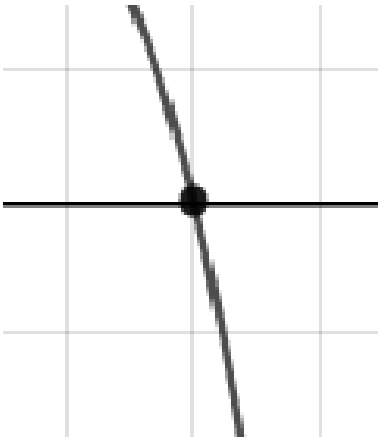
D. $-2(x+1)^{10}(x+2)^5(x+4)^5$

E. $20(x+1)^{10}(x+2)^8(x+4)^9$

---

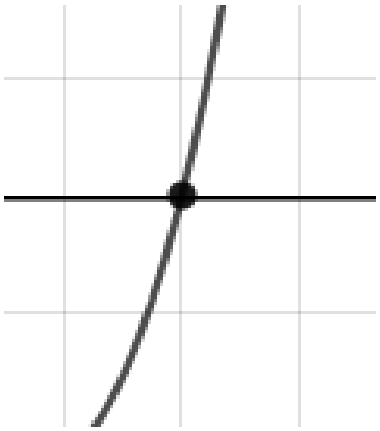
6. Describe the zero behavior of the zero $x = 3$ of the polynomial below.

$$f(x) = 6(x+5)^4(x-5)^2(x+3)^{13}(x-3)^8$$

A. 

B. 

C. 

D. 

E. None of the above.

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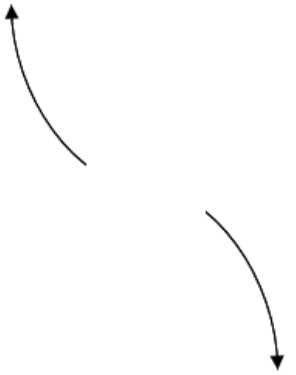
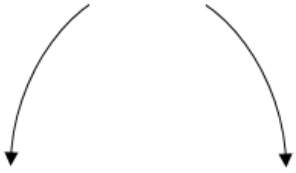
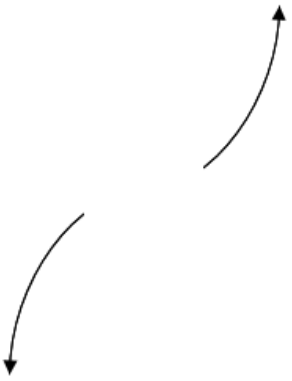
7. Describe the end behavior of the polynomial below.

$$f(x) = -9(x-5)^3(x+5)^8(x-6)^4(x+6)^6$$

A. 

C. 

B. 

D. 

E. None of the above.

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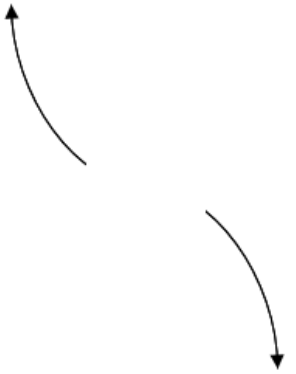
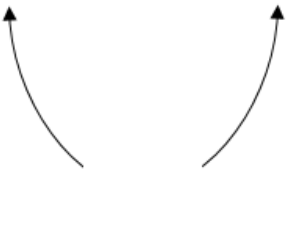
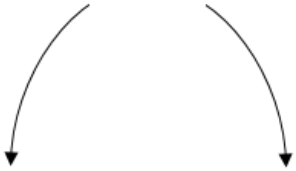
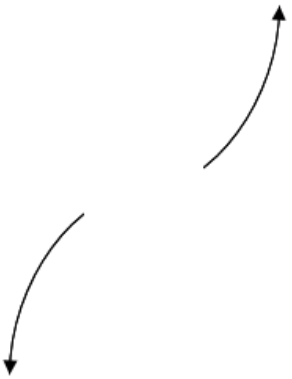
8. Describe the end behavior of the polynomial below.

$$f(x) = 2(x+2)^2(x-2)^7(x+8)^4(x-8)^4$$

A.


C.


B.


D.


E. None of the above.

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9. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

$$\frac{4}{3}, \frac{7}{5}, \text{ and } \frac{-1}{3}$$

A. $a \in [44, 48], b \in [-108, -105], c \in [40, 50],$ and $d \in [-28, -27]$

B. $a \in [44, 48], b \in [9, 14], c \in [-86, -82],$ and $d \in [-28, -27]$

C. $a \in [44, 48], b \in [127, 141], c \in [121, 128],$ and $d \in [25, 34]$

D. $a \in [44, 48], b \in [-108, -105], c \in [40, 50],$ and $d \in [25, 34]$

E. $a \in [44, 48], b \in [107, 110], c \in [40, 50],$ and $d \in [-28, -27]$

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10. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $x^3 + bx^2 + cx + d$.

$$-5 - 3i \text{ and } 1$$

A. $b \in [4, 14], c \in [23.5, 25.2],$ and $d \in [-34.6, -33]$

B. $b \in [-5, 6], c \in [3.8, 6.7],$ and $d \in [-6.8, -4]$

C. $b \in [-10, -2], c \in [23.5, 25.2],$ and $d \in [33.9, 36.6]$

D. $b \in [-5, 6], c \in [-1.7, 3.3],$ and $d \in [-3.6, -0.7]$

E. None of the above.